



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/941,427

08/28/2001

John Peterson

07844-485001

7346

21876

7590

08/10/2005

FISH & RICHARDSON P.C.

P.O. Box 1022

MINNEAPOLIS, MN 55440-1022

EXAMINER

ROSARIO, DENNIS

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,427

Applicant(s)

PETERSON, JOHN

Examiner

Dennis Rosario

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amt/rce 4/21/2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/21/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment and RCE was received on April 21, 2005. Claims 1-30 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 15, 16 and 30 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "four images 320, 330, 340 and 350" as described in the specification on page 5, first paragraph, line 2. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application

must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2,12,14,17 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the modified version of the first image" in line 2.

There is insufficient antecedent basis for this limitation in the claim.

Claim 17 is rejected for the same reason as claim 2.

Claim 12 recites the limitation "transforming the modified version of the second image" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Note that claim 12 may be referring the "determining a transformation" of claim 1, line 8.

Thus, claim 12 ought may be amended to:

The method of claim 1, wherein **determining a transformation in the modified version of the second image comprises:**

altering a shape of a perimeter of the modified version of the second image by moving at least one of said reference points in the modified version of the second image relative to at least one other of said corresponding set of reference points in the second image.

or

The method of claim 1 **further comprising:**

transforming the modified version of the second image alters a shape of a perimeter of the modified version of the second image by moving at least one reference point relative to at least one other reference point.

Claim 27 is rejected for the same reason as claim 12.

Claim 14 recites the limitation "the determining and transforming steps" in line 3. There is insufficient antecedent basis for this limitation in the claim.

The above mentioned "the determining and transforming steps" in line 3 may refer to claim 1, line 8, "determining a transformation" or may refer to claim 1, lines 8 "determining a transformation" and claim 1, line 10, "applying the transform."

See corresponding claim 29 which has proper antecedent basis.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-6, 11-21 and 26-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (US Patent 6,778,207 B1).

Regarding claim 1, Lee et al. discloses a method for shifting perspective of a composite image derived from a plurality of component images including a first image and a second image, the composite image including the first image as a center of projection and a modified version of the second image, the modified version of the second image having been corrected for perspective distortion relative to the first image, the method comprising:

a) receiving an instruction (A "processor" receives or "inputs" in col. 2, line 18 a "PTZ control" in col. 2, line 18 instruction.) to shift the perspective of the composite image (A "processor" receives or "inputs" in col. 2, line 18 a "PTZ control" in col. 2, line 18 to shift the perspective or "[select a] portion of the mosaic...[as shown in fig. 10,num. 328]." in col. 2, lines 17,18.) to make the second image (A "processor" receives or "inputs" in col. 2, line 18 a "PTZ control" in col. 2, line 18 to shift the perspective or "[select a] portion of the mosaic.....[as shown in fig. 10,num. 328]" in col. 2, lines 17,18 to make the second image as shown in fig.9 ,num. I2'...) the center of projection (A "processor" receives or "inputs" in col. 2, line 18 a "PTZ control" in col. 2, line 18 to shift the perspective or "[select a] portion of the mosaic.....[as shown in fig. 9,numerals I1 and I2']" in col. 2, lines 17,18 to make the second image as shown in fig. 9, num. I2' the center of projection as shown in fig. 9, num. 321 which corresponds to the above mentioned PTZ control that selected a portion of the mosaic as the center of projection. Note that fig. 9, num. 321 corresponds to the center of projection because, num. 321 is interpreted as the center area in relation to fig. 9, label I1 and I2' for viewing or projection which is a form of viewing. Thus, portions or the "overlapping regions" in col. 6, line 55 of the images of I1 and I2' of fig. 9 make up the center of projection, 321.);

b) determining a transformation (A “transform...[is]...derived” in col. 3, line 30, which is a form of determining a transformation.) for mapping (A “transform...[is]...derived” in col. 3, line 30, which is a form of determining a transformation, which is used to “map” in col. 5, line 35.) a set of reference points (A “transform...[is]...derived” in col. 3, line 30, which is a form of determining a transformation, which is used to “map... points [or the claimed reference points] on ...images” in col. 5, line 35.) in the modified version of the second image (A “transform...[is]...derived” in col. 3, line 30, which is a form of determining a transformation, which is used to “map... points [or the claimed reference points] on ...images” in col. 5, line 35, in the modified version of the second image as shown in fig. 10, num. 325. Note that fig. 10, num. 325 includes portions of the image I2’ of fig. 9 in addition to the image I1 of fig. 9.) to a corresponding set of reference points in the second image (A “transform...[is]...derived” in col. 3, line 30, which is a form of determining a transformation, which is used to “map... points [or the claimed reference points] on ...images” in col. 5, line 35, in the modified version of the second image as shown in fig. 10, num. 325 to a corresponding set of reference points in the second image as represented as rectangle with “registration points” in col. 6, line 57 in fig. 9,num. 321.); and

c) applying the transform to each of the plurality of derived component images in the composite image to generate a plurality of transformed component images, each of the transformed component images having the second image as their center of projection (This limitation only requires an additional image as shown in fig. 9, num. 11 being processed with the same limitations of paragraph b) where Lee et al. implies that additional images can be used "with any number of cameras" in col. 7, line 61 and states, "images planes of the other cameras can be warped to the image of the central one" in col. 5, lines 33,34. Thus, more than two images can be used using the methods of figs. 9 and 10.).

Regarding claim 2, Lee et al. discloses the method of claim 1, further comprising:

a) merging the modified version of the first image and the second image (Both image of fig. 9, numerals I1 and I2' are modified or "warped" in col. 6, line 66.) to form a second composite image (Both image of fig. 9, numerals I1 and I2' are modified or "warped" in col. 6, line 66 to form a second composite image or "new frame" in col. 6, line 67 as shown in fig. 10, num. 328.) that has the second image as its center of projection (Both image of fig. 9, numerals I1 and I2' are modified or "warped" in col. 6, line 66 to form a second composite image or "new frame" in col. 6, line 67 as shown in fig. 10, num. 328 that has the second image, I2' of fig. 9, as its center of projection because the second image, I2' of fig. 9, was selected via numeral 322 to create the above mentioned new frame or claimed second composite image.).

Claim 3 is rejected the same as claim 2. Thus, argument similar to that presented above for claim 2 is equally applicable to claim 3 and claim 1, paragraph c).

Regarding claim 4, Lee et al. discloses the method of claim 1, wherein:

a) the reference points in the modified version of the second image (Fig. 9, num. 325 is a rectangle that includes the above mentioned registration points.) include four non-collinear and non-coincident points in the modified version of the second image; and

b) the reference points in the second image (Fig. 9, num. 321 is a rectangle that includes the above mentioned registration points.) include four non-collinear and non-coincident points in the second image.

Claim 5 is rejected the same as claim 4. Thus, argument similar to that presented above for claim 4 is equally applicable to claim 5.

Regarding claim 6, Lee et al. discloses the method of claim 5, wherein:

a) the first image (Fig. 9,num. 11) includes a plurality of pixels (Fig. 9,num. 11 includes the above mentioned registration points that corresponds to the claimed plurality of pixels.) and has a perimeter (Fig. 9,num. 11 includes the above mentioned registration points that corresponds to the claimed plurality of pixels and has a perimeter as shown in fig. 9,num. 321.) that defines a set of vertices (Fig. 9,num. 11 includes the above mentioned registration points that corresponds to the claimed plurality of pixels and has a perimeter as shown in fig. 9,num. 321 that defines a set of vertices or "corners" in col. 6, line 40.) ; and

b) transforming the first image based on the transformation includes: transforming the vertices of the first image (Lee et al. states, "The...transform may be...based on...points [of corners]" in col. 6, lines 48,49.); and

c) transforming the pixels of the first image (Lee et al. states, "The... transform may be... based on... points [that corresponds to the claimed pixels]" in col. 6, lines 48,49.) based on the transformation of the vertices (Lee et al. states, "The... transform may be... based on... points [that corresponds to the claimed pixels which are of corners]" in col. 6, lines 48,49.).

Claim 11 is rejected the same as claim 4. Thus, argument similar to that presented above for claim 4 is equally applicable to claim 11.

Regarding claim 12, Lee et al. discloses the method of claim 1, wherein:

a) transforming the modified version of the second image (Fig. 10,num. 328 or the claimed modified version of the second image is a result of a "transform" in col. 6, line 48.) alters the shape of a perimeter of the modified version of the second image (Fig. 10,num. 328 or the claimed modified version of the second image is a result of a "transform" in col. 6, line 48 that altered the shape as shown in fig. 10, num. 325 relative to fig. 9, num. 321 due to a "PTZ signal" in col. 6, line 63. Note, also that the PTZ signal stands for pan tilt and zoom; thus, fig. 10, num. 325 is a result of a pan, tilt and zoom where the zoom function can "zoom out" in col. 1, line 28 to form a shape as shown in fig. 9, num. 321 of the modified version of the second image using the "transform...repeatedly" in col. 6, line 52.) by moving at least one reference point relative to at least one other reference point.

Regarding claim 13, Lee et al. discloses the method of claim 1, wherein:

a) the modified version of the second image has a perimeter forming a trapezoid (Fig. , num. 325 is a shape that corresponds to the claimed trapezoid.); and

b) transforming the modified version of the second image alters the perimeter of the modified version of the second image to form a rectangle (Fig. 9, num. 321 corresponds to the claimed rectangle as a result of using the above mentioned transform repeatedly: first the transform is used to generate fig. 10,num. 325 and is applied again with another PTZ signal to zoom out to generate the image of fig. 9,num. 321.).

Regarding claim 14, Lee et al. discloses the method of claim 1, wherein:

a) the instruction to shift perspective (The "PTZ control" in col. 2, line 18 instruction) is received as a single user input (The "PTZ control" in col. 2, line 18 instruction is received as a single user input. Note that it is implied that a user will determine the PTZ control instruction.); and

b) the determining and transforming steps are automatically performed (via "processor" in col. 2, line 19) in response to the user input (being inputted to the processor.).

Claims 15 is rejected the same as claims 1 and 14. Thus, argument similar to that presented above for claims 1 and 14 is equally applicable to claim 15.

Claim 16 is rejected the same as claim 1. Thus, argument similar to that presented above for claim 1 of a method is equally applicable to claim 16 except for the limitation of a computer program product as disclosed in Lee et al. at "software" in col. 3, line 22.

Claim 17 is rejected the same as claim 2. Thus, argument similar to that

presented above for claim 2 is equally applicable to claim 17.

Claim 18 is rejected the same as claim 3. Thus, argument similar to that presented above for claim 3 is equally applicable to claim 18.

Claim 19 is rejected the same as claim 4. Thus, argument similar to that presented above for claim 4 is equally applicable to claim 19.

Claim 20 is rejected the same as claim 5. Thus, argument similar to that presented above for claim 5 is equally applicable to claim 20.

Claim 21 is rejected the same as claim 6. Thus, argument similar to that presented above for claim 6 is equally applicable to claim 21.

Claim 26 is rejected the same as claim 11. Thus, argument similar to that presented above for claim 11 is equally applicable to claim 26.

Claim 27 is rejected the same as claim 12. Thus, argument similar to that presented above for claim 12 is equally applicable to claim 27.

Claim 28 is rejected the same as claim 13. Thus, argument similar to that presented above for claim 13 is equally applicable to claim 28.

Claim 29 is rejected the same as claim 14. Thus, argument similar to that presented above for claim 14 is equally applicable to claim 29.

Claim 30 are rejected the same as claims 15 and 16. Thus, argument similar to that presented above for claims 15 and 16 is equally applicable to claim 30.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 7-10 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US Patent 6,778,207 B1) in view of Heckbert (Master's Thesis from the IDS).

Regarding claim 7, Lee et al. teaches the method of claim 6, wherein:

the transformation ("The transform" in col. 3, line 31...) is represented ("The transform" in col. 3, line 31 is represented or "described" in another reference as mentioned in col. 3, lines 36-41 where the reference represents a teaching of the transform.) as a transformation matrix.

Lee et al. does not teach that the transform is represented as a transformation matrix, but does suggest using another reference for using the transform as does teach "deriv[ing]" in col. 3, line 31 the transform which suggests mathematical operators such as a matrix which is a tool to one of ordinary skill in the art used for deriving. However, Heckbert teaches the transformation as suggested by Lee et al. or (M_{sd}) is represented as a transformation matrix (as mentioned in Heckbert, page 19, section: "Inferring Projective Mappings", line 7.).

Regarding claim 8, Lee et al. and Heckburt teaches the method of claim 7, wherein:

a) the transformation matrix is derived from the vertices of the modified version of the second image. Heckburt teaches that all points in one image ($u_{sub. k}$, $v_{sub. k}$) is mapped to other points ($x_{sub. k}$, $y_{sub. k}$) in a corresponding image using vertices ($k=0,1,2,3$) for each point.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Lee et al.'s teaching of using a reference that teaches a transform such as the Heckburt reference, because the Heckburt reference teaching of corresponding points with a matrix provides a predictable transformation between images. Therefore users in 3D modeling and image distortion software can use the mappings to provide predictable features (lines, equispaced points, and angles) that are persevered (Heckbert, page 11, Section 2.2).

Claim 9 is rejected the same as claim 8. Thus, argument similar to that presented above for claim 8 is equally applicable to claim 9.

Regarding claim 10, Lee et al. and Heckbud teaches the method of claim 9, wherein the transformation matrix, M , is given by the matrix equation shown in Heckbert, page 19.

Claims 22-25 are rejected the same as claims 7-10, respectively. Thus, argument similar to that presented above for claims 7-10 is equally applicable to claims 22-25.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Boland et al. (US Patent 6,674,484 B1) is pertinent as teaching a method of a revolving cube as shown in fig. 6,7 in a coordinate system as shown in figs. 4 and 5 that can be interpreted as a coordinate system of points or coordinates.

Edmark (US Patent 6,567,085 B1) is pertinent as teaching a method of viewing an image as shown in fig. 4 at two viewpoints as shown in fig. 5 that includes points. Also see figure 7 and 8 that includes points.

Bishop et al. (US Patent 6,424,351 B1) is pertinent as teaching a method of correcting for perspective distortion relative to a central image (building) as shown in figs. 25,26 changing view as shown in fig. 27 with the central image modified and modified again via zooming on the central building in fig. 28.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario whose telephone number is (571) 272-7397. The examiner can normally be reached on 6-3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DR

Dennis Rosario
Unit 2621



JOSEPH MANCUSO
PRIMARY EXAMINER